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(54) **Method of attaching a fastening tape to a molded article and a mold therefor**

Verfahren zum Anbringen eines Befestigungsbandes auf einem Formkörper und zugehörige Form

Procédé de fixation d'une bande d'agrafage sur un corps moulé et moule utilisé

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EP-A- 0 116 357 **EP-A- 0 145 523**
EP-A- 0 168 240 **EP-A- 0 439 969**
WO-A-91/11326

• **PATENT ABSTRACTS OF JAPAN** vol. 8, no. 167
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EP 0 562 820 B1

Description

This invention relates to a method of attaching a fastening tape to a molded article and a mold for forming a cellular plastic or foam product for use as a cushioning material for an automobile seat or backrest.

It has thus far been proposed to use a fastening tape generally known as a velcro-like or surface-type fastener for attachment to a foam-molded article such as a seat cushion, the fastening tape having on its one side a gripping means typically embodied in the form of a multiplicity of hooks designed to engage with complementary gripping means typically in the form of loops or eyes provided on an article such as a seat cover. The fastening tape is attached to such foam-molded article during the molding of the latter as is known in the art.

EP-A-0 145 523 shows a fastening tape having the hook part of a hook and loop fastener on one side, and anchoring elements on the other side. The anchoring elements are embedded in a foamed article to hold the tape on the surface of the article.

Such tape attachment is also disclosed in Japanese Patent Publication JP-B-3018816 (member of the patent family of EP-A-0 145 523) in which there is used a mold having a main cavity for receiving the hook-carrying face of a fastening tape and on each side of this main cavity, two small lateral cavities or grooves adhesively coated for holding the longitudinal marginal areas of the tape in place during the molding operation, the tape having on its back side a plurality of anchoring elements protruding into and anchoring a molding material in the mold cavities.

A similar means of attaching a fastening tape to a foam-molded article such as a seat cushion is disclosed in Japanese Patent Publication JP-B-3060291 (& EP-A-0 145 603) in which the tape is protected with a thin film disposed over its hook-carrying surface molding and held in place, before and during molding, relative to the mold by a magnetic means, the tape having its longitudinal marginal areas adhesively fixed within the small cavities on opposite sides of the main cavity.

EP-A-0 439 969, on which the pre-characterising portion of claim 1 is based, shows a strip of fastener material having, on one side, a gripping element in the form of hooks of a hook and loop fastener system. The gripping element is surrounded by a sealing lip, and a magnetizable means is provided on the other side of the strip, opposite the gripping element. The gripping element and sealing lip are received in a recess in the mould wall and held in place by a magnet in the mould wall, which attracts the magnetisable means. The strip, outside of the sealing lip extends beyond the edges of the recess.

Japanese Laid-Open Patent Publication JP-A-62102793 (& US-A-4 792 111) features the use of a base made of or associated with a resilient material received resiliently within the mold cavity and an attachment web of fabric carrying loops for engagement with complementary hooks on a fastening tape, the base,

web and tape being interconnected in this order with the hook-carrying face of the tape exposed to view.

The above prior art techniques have their respective approaches for protecting the fastening tape against penetration thereto of a molding material before and during the molding process as by means of a protective film, a magnetic device and a resilient base extension, respectively.

These prior art devices have a drawback in that they are costly and complicated in the operation of attaching the fastening tape to a molded article.

Another common drawback is that the fastening tape is restricted in its dimension and location as these parameters are governed by the physical characteristics of the mold cavity in which the tape is received during the molding process.

JP-A-59063735 is a system for packaging a semiconductor device, in which the device and its electrodes are carried on a heat dissipating plate which is held against the bottom of a mould cavity by a pin. The pin has a sharp point which bears against the heat conducting plate to minimise the ingress of moisture between the moulding resin and the plate after moulding.

WO-A-91/11326 shows a method of holding a thin layer of material, such as fabric or moquette, against a heat conducting plate while moulding a layer of plastics material onto the opposite side of the material. The material is held against the plate by bushes of the same material as the moulding material and are left in place after moulding.

US-A-4 792 111 shows a mould for a vehicle seat, in which side walls of the mould diverge outwardly. A base plate is frictionally secured in a recessed groove in the bottom wall of the die and a portion of a pile-type fastener is releasably held by the base plate, to be integrally moulded with the seat.

It is therefore a primary object of the present invention to provide a method of attaching a fastening tape having a male or hook gripping element to a molded article such as a seat cushion, where the method is simple and less costly and where it is also capable of attaching fastening tapes of different dimensions at different locations with respect to a molded article.

A further object of the invention is to provide a mold for foam-molding an article such as a seat or backrest cushion to which a fastening tape is attached during the molding process, where the mold is provided with a pressure-applying means of holding a fastening tape of the type above mentioned in hermetically sealed engagement with a cavity wall of the mold thereby preventing the penetration of a molding material into the face of the tape which carries the gripping element.

According to one aspect of the invention, there is provided a method of attaching a fastening tape to an article to be molded in a mold comprising a core mold and a cavity mold, said tape having a base carrying a gripping element and a flexible sealing flange on one side, and an anchoring element, said sealing flange defining an open chamber in which the gripping element

is accommodated, the method comprising

- (i) positioning the tape on a bottom wall surface of the mold at a selected location with the gripping element and the sealing flange facing toward said bottom wall surface;
- (ii) applying a pressure to said tape to hold the gripping element flat against the bottom wall surface and form a liquid-tight seal between the flexible sealing flange of the tape and the bottom wall surface;
- (iii) closing said mold and filling the same with a molding material in liquid phase;
- (iv) curing said molding material; and
- (v) removing the molded article from said mold with said anchoring element embedded in said molded article and said gripping element exposed to view, characterised in that the bottom wall surface in the region surrounding and including said selected location is substantially flat, said anchoring element is positioned on the opposite side of the base of the tape with respect to the gripping element, in that pressure is applied to said tape by means of a pin or a plate which extends through the mold cavity and bears on the tape, and in that the pin or plate is removed from the molded article.

According to another aspect of the invention, there is provided a mold for molding an article incorporating an attached fastening tape the fastening tape having a base carrying an anchoring element on one side, a gripping element and a flexible sealing flange on the opposite side, defining an open chamber in which the gripping element is accommodated, the mold comprising a composite mold formed of a cavity mold having a cavity defined by outwardly diverging curved side walls and a bottom wall having a substantial portion of its surface extending substantially flat laterally toward side walls and a core mold having pressure-applying means in the form of a pressure pin which is releasably engageable with said anchoring element or said one side of said base of the tape for applying a pressure to said tape such that said sealing flange is held flat against said substantially flat portion of said bottom wall of said cavity mold to seal said chamber liquid-tight against leakage thereinto of a molding material during molding.

According to a further aspect of the invention, there is provided a mold for molding an article incorporating an attached fastening tape according to one of the methods defined above, the fastening tape having a base carrying an anchoring element on one side, a gripping element and a flexible sealing flange on the opposite side, defining an open chamber in which the gripping element is accommodated, the mold comprising a composite mold formed of a cavity mold having a cavity defined by outwardly diverging curved side walls and a bottom wall having a substantial portion of its surface extending substantially flat laterally toward side

walls and a core mold having a plurality of through-holes in a wall thereof, a pressure plate member releasably engageable with said core mold and having a plurality of pressure-applying means which pass through said through-holes to engage with said tape and to apply a pressure to said tape so that said sealing flange is held flat against said substantially flat portion of said bottom wall of said cavity mold to seal said chamber liquid-tight against leakage thereinto of a molding material during molding.

The above and other objects of the invention will be better understood from reading the following detailed description with reference to the accompanying drawings which illustrate by way of example some preferred embodiments.

Figure 1 is a diagrammatic perspective view of a fastening tape embodying the invention, the tape being shown with its gripping side up;

Figure 2 is a diagrammatic perspective view of one form of mold embodying the invention;

Figure 3 is a diagrammatic perspective view of the tape of Figure 1, but with its opposite or anchoring side up facing toward one form of pressure-applying means extending from the mold;

Figure 4 is a view similar to Figure 3 but showing the pressure-applying means fully engaged with the anchoring side of the tape;

Figure 5 is a transverse cross-sectional view of the mold shown closed;

Figure 6 is a transverse cross-sectional view of the mold shown opened;

Figure 7 is a transverse cross-sectional view of a foam-molded cushion product

Figure 8 is a view similar to Figure 4 but showing a different form of pressure-applying means;

Figure 9 is a cross-sectional view taken on the line IX-IX of Figure 8;

Figure 10 is a perspective view of another form of mold employed in accordance with the invention;

Figure 11 is a perspective view of a plurality of serially interconnected fastening tapes with their respective anchoring sides facing toward corresponding pressure-applying means;

Figure 12 is a perspective view of an elongated fastening tape with its anchoring side facing toward pressure-applying means;

Figure 13 is a perspective view of two interconnected fastening tapes of Figures 3 and 4 shown engaged with still another form of pressure-applying means;

Figure 14 is a cross-sectional view of a mold of a three-piece construction embodying the invention;

Figure 15 is a cross-sectional view of the mold of Figure 14 shown closed;

Figure 16 is a view similar to Figure 15 but showing the pressure-applying means lifted from the mold cavity; and

Figure 17 is an exploded cross-sectional view of the

mold shown in Figures 14 - 16.

Figures 1 to 7 inclusive are utilized to illustrate a preferred method and apparatus according to the invention for attaching a fastening tape to a foam-molded article during the molding of the latter.

Referring first to Figure 1, there is shown a fastening tape 10 of a woven or knitted structure which comprises a generally flat square web or base 11 carrying on one of its surfaces or sides 10a a gripping element 12 in the form of a multiplicity of hooks 13 for gripping engagement with complimentary loops on an article to be molded such as a seat cover (not shown), and on the opposite surface or side 10b an anchoring element 14 in the form of a plurality (four as presently illustrated) of rectangular hollow stool-like members 15 for anchoring a molding material (Figures 5 and 6) each having spaced side portions 15a defining therebetween a through-opening 15b to be filled with the molding material. A flexible sealing flange 16 extends integrally and peripherally from the four sides of the base 11 in surrounding relation to the hooks 13 and is flared in a direction facing toward a mold cavity (Figures 5 and 6) thereby forming an open chamber 16a with all of its four peripheral edges 16b being substantially flat and flush for purposes hereinafter to be described.

A preferred form of mold 17 embodying the invention as better shown is a composite mold of a generally rectangular box-like configuration comprised of cooperating mold halves, which are separably interengageable, one of which is referred to herein as a core mold 18 and the other as a cavity mold 19.

The core mold 18 is provided with a plurality of aligned rows of pressure pins 20 constituting what is termed "pressure-applying means" hereunder, the pins 20 extending downwardly toward the cavity mold 19 and being spaced one from another by a predetermined distance such that individual pins 20 each register in position with corresponding fastening tapes 10 in the cavity mold 19. Each of the pressure pins 20 has a cross-sectionally round body 21 with an annular ring or disc 22 connected thereto by a reduced neck portion 23 at its free end, the ring 22 having a diameter corresponding to or slightly larger than a space jointly defined by the four anchoring members 15 such that the ring 22 fit snugly therebetween as better shown in Figure 4.

The core mold 18 and the cavity mold 19 have their respective cavities 24 and 25 which mate with each other to establish a continuity of one integral cavity when the two molds are fully closed together as shown in Figure 5. The cavity 25 of the cavity mold 19 is defined by outwardly diverging curved side walls 19a and a substantially flat bottom wall 19b of the mold 19, the bottom wall 19b serving as an abutment against which the fastening tape 10 is held during the molding process.

Designated at 26 is a feed inlet formed centrally in the core mold 18 for charging therethrough a molding material M such as polyurethane into the cavities 24

and 25.

The bottom wall 19b of the cavity mold 19 is finished as flat and smooth as possible to ensure an effective hermetic seal with the gripping side 10a of the tape 10 by a so-called "sucking action" in which the pressure within the chamber 16a of the tape 16 is reduced upon pressure contact with the pressure pin 20, causing the sealing flange 16 to stick along its peripheral edges 16b onto the bottom wall 19b of the cavity wall 19 thereby preventing penetration into the chamber 16a of the molding material M which would otherwise physically destroy the function of the gripping element 12, i.e., hooks 13.

According to the method of the invention, the fastening tape 10 is positioned in the mold 17 with its gripping side 10a held flat against the bottom wall 19b of the cavity mold 19, followed by closing the core mold 18 upon the cavity mold 19, when the pressure pin 20 on the core mold 18 is brought into pressure engagement with the tape 10 with the annular ring 22 of the pin 20 slipped in between the anchoring members 15 on the anchoring side 10b of the tape 10. In this instance, it goes without saying that there may be placed in the mold 17 as many individual fastening tapes 10 as desired depending upon the number of the pressure pins 20 in the core mold 18.

With the tape or tapes 10 thus set in position with the mold 17, the molding material M in liquid phase is charged from a feed means 27 until the cavity 24, 25 of the closed mold 17 is substantially filled up as shown in Figure 5, in which instance the molding material M is anchored by the anchoring element 14 (stool-like members 15) of the fastening tape 10, but is prevented from penetrating or leaking into the chamber 16a of the tape 10 in which the gripping element 12 (hooks 13) is accommodated, because the chamber 16a is sealed by the sealing flange 16 hermetically engaged with the flat bottom wall 19b of the cavity mold 19, forming a liquid-tight seal therebetween by the sucking action. After the molding material M is cured in a manner well known in the art, the mold 17 is opened by lifting the core mold 18 together with the molded article M' apart from the cavity mold 19 as shown in Figure 6 and thereafter the molded article M' is released or detached from the core mold 18 by drawing the pressure pins 20 out of the article M' to produce a finished foam-molded article M' such as an automobile seat cushion (Figure 7) having the fastening tape 10 with the gripping hooks 13 exposed to view which are to be engaged with complimentary loops on a mating article such as a seat cover not shown.

Figures 8 and 9 illustrate a modified form of pressure-applying means 20' in which there is provided an engaging member 22' in place of the ring 22, the engaging member 22' connected to a free end of the pin body 21 by means of a threaded bolt 28. The engaging member 22' is formed from polyurethane or like elastically deformable material such that it can resiliently engage with the anchoring element 14.

Figures 10 and 11 illustrate another modified form

of pressure-applying means 20" and a modified form of anchoring element 14'. The pressure pin 20" is uniform in diameter throughout its length and devoid of ring 22 or engaging member 22'. It is designed to press directly against the anchoring side face 10b of the tape 10 without contact with the anchoring members 15' each having a rounded head 15'a, for which purpose the anchoring members 15' are spaced apart a distance sufficient to provide a clearance therebetween for the passage of the pin 20" and a row of individual tapes 10 are interconnected by connecting threads 29.

Figure 12 shows another modified form of fastening tape 10' which has an elongated base 11' carrying thereon an increased number of shaped anchoring members 15' without the use of connecting threads 29.

Figure 13 shows a further modification in which the pressure-applying means comprises a plate member 22" in substitution for the pressure pins 20, 20', 20" which is designed with one of its side edges to position in between the anchoring members 22 and press the tape 10 against the bottom wall 19b of the cavity mold 19.

Figures 14 to 17 inclusive show a modified form of mold 17' which is a three-piece construction comprising a core mold 18', a cavity mold 19 and a pressure plate member 30 releasably engageable with the core mold 18'. The pressure plate member 30 is provided centrally with a feed inlet 26 for introducing a molding material M and with spaced rows of pressure pins 20 extending downwardly for pressure engagement with the fastening tapes 10 in the manner already described. The core mold 18' is provided with a feed inlet 26' registrable with the inlet 26 of the plate member 30 and a plurality of through-holes 31 for receiving therethrough corresponding pressure pins 20 on the pressure plate member 30.

The molding process is carried out with the three mold parts 18', 19 and 30 assembled together as shown in Figure 15, and upon curing of the molding material M, the pressure plate member 30 is lifted apart from the core mold 18' with the pressure pins 20 simultaneously released from the molded article M' as shown in Figure 16. The core mold 18' is thereafter separated from the cavity mold 19 to withdraw the finished article M" as shown in Figure 17.

Claims

1. A method of attaching a fastening tape (10) to an article to be molded in a mold (17) comprising a core mold (18) and a cavity mold (19), said tape (10) having a base (11) carrying a gripping element (12) and a flexible sealing flange (16) on one side (10a), and an anchoring element (14), said sealing flange (16) defining an open chamber in which the gripping element (12) is accommodated, the method comprising

(i) positioning the tape (10) on a bottom wall

surface of the mold at a selected location with the gripping element (12) and the sealing flange (16) facing toward said bottom wall surface;

(ii) applying a pressure to said tape (10) to hold the gripping element (12) flat against the bottom wall surface and form a liquid-tight seal between the flexible sealing flange (16) of the tape (10) and the bottom wall surface;

(iii) closing said mold (17) and filling the same with a molding material (M) in liquid phase;

(iv) curing said molding material (M); and

(v) removing the molded article (M') from said mold 17 with said anchoring element (14) embedded in said molded article and said gripping element (12) exposed to view, characterised in that the bottom wall surface in the region surrounding and including said selected location is substantially flat, said anchoring element (14) is positioned on the opposite side (10b) of the base of the tape (10) with respect to the gripping element (12), in that pressure is applied to said tape (10) by means of a pin (20, 20', 20") or a plate (22") which extends through the mold cavity and bears on the tape (10), and in that the pin or plate is removed from the molded article.

2. A method according to claim 1 characterised in that the base of said fastening tape (10) is substantially flat and carries on one of its sides (10a) the flange and the gripping element (12) in the form of a multiplicity of hooks (13) and on the opposite side (10b) the anchoring element (14) in the form of a plurality of anchoring members (15), the flexible sealing flange (16) extending integrally and peripherally from said base (11) surrounding said gripping element (12) and being flared outwardly in a direction facing toward said bottom wall surface, said sealing flange (16) having its outer edge (16b) finished substantially flat and smooth.
3. A mold (17) for molding an article incorporating an attached fastening tape (10) according to the method of claim 1 or 2, the fastening tape having a base (11) carrying an anchoring element (14) on one side (10b), a gripping element (12) and a flexible sealing flange (16) on the opposite side (10a), said flange (16) defining an open chamber (16b) in which the gripping element (12) is accommodated, the mold comprising a composite mold formed of a cavity mold (19) having a cavity (25) defined by outwardly diverging curved side walls (19a) and a bottom wall (19b) having a substantial portion of its surface extending substantially flat laterally toward side walls (19a, 19b) and a core mold (18) having pressure-applying means in the form of a pressure pin (20, 20', 20", 22") which is releasably engageable with said anchoring element (14) or said one

side (10b) of said base of the tape for applying a pressure to said tape (10) such that said sealing flange (16) is held flat against said substantially flat portion of said bottom wall (19b) of said cavity mold (19) to seal said chamber (16a) liquid-tight against leakage thereinto of a molding material (M) during molding.

4. A mold (17) according to claim 3, characterised in that said pressure pin (20) has an annular ring (22) which is releasably engageable with said anchoring element (14).
5. A mold (17) according to claim 3, characterised in that said pressure pin (20') has an elastically deformable engaging member (22') which is releasably engageable with said anchoring element (14).
6. A mold (17) according to claim 3, characterised in that said pressure pin (20'') is releasably engageable with said one side (10b) of said tape (10).
7. A mold (17) for molding an article incorporating an attached fastening tape (10) according to the method of claim 1 or 2, the fastening tape (10) having a base carrying an anchoring element (14) on one side (10b), a gripping element (12) and a flexible sealing flange (16) on the opposite side (10a), said flange (16) defining an open chamber (16b) in which the gripping element (12) is accommodated, the mold comprising a composite mold formed of a cavity mold (19) having a cavity (25) defined by outwardly diverging curved side walls (19a) and a bottom wall (19b) having a substantial portion of its surface extending substantially flat laterally toward side walls (19a, 19b) and a core mold (18) having a plurality of through-holes (31) in a wall thereof, a pressure plate member (30) releasably engageable with said core mold (18) and having a plurality of pressure-applying means (20, 20', 20'') which pass through said through-holes (31) to engage with said tape (10) and to apply a pressure to said tape (10) so that said sealing flange (16) is held flat against said substantially flat portion of said bottom wall (19b) of said cavity mold (19) to seal said chamber (16b) liquid-tight against leakage thereinto of a molding material M during molding.

Patentansprüche

1. Verfahren zum Anbringen eines Befestigungsbandes (10) an einem in einer Form (17) zu gießenden Gegenstand, umfassend eine Kernform (18) und eine Hohlform (19), wobei das Band (10) eine Basis (11) hat, die ein Greifelement (12) und einen flexiblen Dichtflansch (16) auf einer Seite und ein Verankerungselement (14) trägt, wobei der Dichtflansch (16) eine offene Kammer begrenzt, in der das Greifelement (12) angeordnet ist, wobei

das Verfahren umfaßt

- (i) Anordnen des Bandes (10) auf einer Bodenwandfläche der Form an einer ausgewählten Stelle, wobei das Greifelement (12) und der Dichtflansch (16) der Bodenwandfläche zugekehrt sind;
 - (ii) Aufbringen einer Druckkraft auf das Band (10), um das Greifelement (12) eben an der Bodenwandfläche zu halten und eine flüssigkeitsdichte Abdichtung zwischen dem flexiblen Dichtflansch (16) des Bandes (10) und der Bodenwandfläche zu schaffen;
 - (iii) Schließen der Form (17) und Füllen derselben mit einem Gießmaterial (M) in flüssigem Zustand;
 - (iv) Härten des Gießmaterials (M); und
 - (v) Entnehmen des gegossenen Gegenstandes (M') aus der Form (17), wobei das Verankerungselement (14) in den gegossenen Gegenstand eingebettet ist und das Greifelement (12) freiliegt, dadurch gekennzeichnet, daß die Bodenwandfläche in dem die ausgewählte Stelle umgebenden und enthaltenden Bereich im wesentlichen eben ist, daß das Verankerungselement (14) in Bezug auf das Greifelement (12) auf der gegenüberliegenden Seite (10b) der Basis des Bandes (10) angeordnet ist, daß die Druckkraft mit einem Stift (10, 20', 20'') oder einer Platte (22'') auf das Band (10) aufgebracht wird, der beziehungsweise die sich durch den Formhohlraum erstreckt und an dem Band (10) anliegt, und daß der Stift oder die Platte von dem gegossenen Gegenstand beseitigt wird.
2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die Basis des Befestigungsbandes (10) im wesentlichen eben ist und auf einer ihrer Seiten (10a) den Flansch und das Greifelement (12) in Form einer Vielzahl von Haken (13) trägt und auf der gegenüberliegenden Seite (10b) das Verankerungselement (14) in Form einer Vielzahl von Verankerungsteilen (15) trägt, wobei der flexible Dichtflansch (16) einstückig mit der Basis (11) und an deren das Greifelement (12) umgebenden Umfang verläuft und zu der Bodenwandfläche hin nach außen erweitert ist, wobei der Außenrand (16b) des Dichtflansches (16) im wesentlichen eben und glatt ausgebildet ist.
 3. Form (17) zum Gießen eines Gegenstandes, der ein daran angebrachtes Befestigungsband (10) gemäß dem Verfahren nach Anspruch 1 oder 2 enthält, wobei das Befestigungsband eine Basis (11) hat, die ein Verankerungselement (14) auf einer Seite (10b) und ein Greifelement (12) sowie einen flexiblen Dichtflansch (16) auf der gegenüberliegenden Seite (10a) trägt, wobei der Flansch (16)

eine offene Kammer (16a) begrenzt, in der das Greifelement (12) angebracht ist, wobei die Form aus einer zusammengesetzten Form besteht, die von einer Hohlform (19) mit einem Hohlraum (25), der von nach außen divergierenden gekrümmten Seitenwänden (19a) und einer Bodenwand (19b) begrenzt ist, deren Fläche zu einem überwiegenden Teil im wesentlichen eben seitwärts zu den Seitenwänden (19a, 19b) hin verläuft, und von einer Kernform (18) gebildet ist, die Andrückmittel in Form eines Andrückstiftes (20, 20', 20'', 22'') aufweist, der mit dem Verankerungselement (14) oder der besagten einen Seite (10b) der Basis des Bandes in Eingriff bringbar ist, um eine Druckkraft auf das Band (10) auszuüben, so daß der Dichtflansch (16) an dem im wesentlichen ebenen Bereich der Bodenwand (19b) der Hohlform (19) eben gehalten ist, um die besagte Kammer (16a) während des Gießens gegen das Eindringen eines Gießmaterials (M) flüssigkeitsdicht abzudichten.

4. Form (17) nach Anspruch 3, dadurch gekennzeichnet, daß der Andrückstift (20) einen Ring (22) aufweist, der mit dem Verankerungselement (14) lösbar in Eingriff bringbar ist.

5. Form (17) nach Anspruch 3, dadurch gekennzeichnet, daß der Andrückstift (20') ein elastisch verformbares Eingriffsteil (22') aufweist, das mit dem Verankerungselement (14) lösbar in Eingriff bringbar ist.

6. Form (17) nach Anspruch 3, dadurch gekennzeichnet, daß der Andrückstift (20'') mit der besagten einen Seite (10b) des Bandes (10) lösbar in Eingriff bringbar ist.

7. Form (17) zum Gießen eines ein daran angebrachten Befestigungsband (10) enthaltenden Gegenstandes gemäß dem Verfahren nach Anspruch 1 oder 2, wobei das Befestigungsband (10) eine Basis hat, die ein Verankerungselement (14) auf einer Seite (10b) und ein Greifelement (12) und einen flexiblen Dichtflansch (16) auf der gegenüberliegenden Seite (10a) trägt, wobei der Flansch (16) eine offene Kammer (16b) begrenzt, in der das Greifelement (12) angeordnet ist, wobei die Form aus einer zusammengesetzten Form besteht, die von einer Hohlform (19) mit einem Hohlraum (25), der von nach außen divergierenden gekrümmten Seitenwänden (19a) und einer Bodenwand (19b) begrenzt ist, deren Fläche zum überwiegenden Teil im wesentlichen eben seitwärts zu den Seitenwänden (19a, 19b) verläuft, von einer Kernform (18), die in einer Wand eine Vielzahl von Bohrungen (31) aufweist, und von einer Druckplatte (30) gebildet wird, die mit der Kernform (18) lösbar in Eingriff bringbar ist und eine Vielzahl von Andrückmitteln (20, 20', 20'') aufweist, die durch die Bohrungen

(31) hindurchragen, um das Band (10) zu erfassen und eine Druckkraft auf das Band (10) auszuüben, so daß der Dichtflansch (16) an dem im wesentlichen ebenen Bereich der Bodenwand (19b) der Hohlform (19) eben gehalten ist, um die besagte Kammer (16b) während des Gießens gegen das Eindringen eines Gießmaterials (M) flüssigkeitsdicht abzudichten.

Revendications

1. Procédé de fixation d'une bande d'agrafage (10) sur un objet devant être moulé dans un moule (17) qui comprend un moule à noyau (18) et un moule à cavité (19), ladite bande (10) comprenant une base (11), qui porte un élément d'accrochage (12) et une jupe souple d'étanchéité (16) sur une face (10a), et un élément d'ancrage (14), ladite jupe d'étanchéité (16) définissant une chambre ouverte dans laquelle est logé ledit élément d'accrochage (12), ledit procédé comprenant les étapes consistant à :

(i) placer la bande (10) sur la surface de la paroi formant fond du moule en un emplacement sélectionné, l'élément d'accrochage (12) et la jupe d'étanchéité (16) étant tournés vers ladite surface de la paroi formant fond,

(ii) appliquer une pression à ladite bande (10) pour maintenir ledit élément d'accrochage (12) à plat contre la surface de la paroi formant fond et former un joint étanche aux liquides entre la jupe souple d'étanchéité (16) de la bande (10) et la surface de la paroi formant fond,

(iii) fermer ledit moule (17) et le remplir d'un matériau de moulage (M) en phase liquide,

(iv) laisser durcir ledit matériau de moulage (M), et

(v) retirer l'objet moulé (M') dudit moule (17), ledit élément d'ancrage (14) étant noyé dans ledit objet moulé et ledit élément d'accrochage (12) étant découvert,

caractérisé en ce que la surface de la paroi formant fond se trouvant dans la région qui entoure et contient ledit emplacement sélectionné est sensiblement plate, en ce que ledit élément d'ancrage (14) est placé sur la face opposée (10b) de la base de la bande (10) par rapport à l'élément d'accrochage (12), en ce que la pression est appliquée à ladite bande (10) par une tige (20, 20', 20'') ou une plaque (22'') qui s'étend à travers la cavité du moule et appuie sur la bande (10), et en ce que la tige ou la plaque est retirée de l'objet moulé.

2. Procédé selon la revendication 1, caractérisé en ce que la base de ladite bande d'agrafage (10) est sensiblement plate et porte sur une de ses faces (10a) la jupe et l'élément d'accrochage (12) qui se présente sous la forme d'une multiplicité de cro-

chets (13) et, sur la face opposée (10b), l'élément d'ancrage (14) qui se présente sous la forme d'une pluralité de moyens d'ancrage (15), la jupe souple d'étanchéité (16) s'étendant d'un seul tenant avec la périphérie de ladite base (11) en entourant ledit élément d'accrochage (12) et étant évasée vers l'extérieur dans une direction tournée vers ladite surface de la paroi formant fond, ladite la jupe d'étanchéité (16) ayant son bord extérieur (16b) qui se termine en étant sensiblement plat et lisse.

3. Moule (17) servant à mouler un objet contenant une bande d'agrafage (10) fixée selon le procédé de la revendication 1 ou 2, la bande d'agrafage comprenant une base (11) qui porte un élément d'ancrage (14) sur une face (10b), un élément d'accrochage (12) et une jupe souple d'étanchéité (16) sur la face opposée (10a), ladite jupe (16) définissant une chambre ouverte (16b) dans laquelle est logé ledit élément d'accrochage (12), ledit moule étant un moule composite formé d'un moule à cavité (19) qui comporte une cavité (25) définie par des parois latérales (19a) courbes et divergeant vers l'extérieur et une paroi formant fond (19b) dont une partie substantielle de la surface s'étend sensiblement à plat vers les côtés, en direction des parois latérales (19a, 19b), et un moule à noyau (18) qui comporte un moyen d'application de pression se présentant sous la forme d'une tige de pression (20, 20', 20'', 22'') pouvant se mettre en prise libérable avec ledit élément d'ancrage (14) ou ladite première face (10b) de ladite base de la bande pour appliquer une pression à ladite bande (10) de telle sorte que ladite jupe d'étanchéité (16) soit maintenue à plat contre ladite partie sensiblement plate de ladite paroi formant fond (19b) du moule à cavité (19) pour fermer ladite chambre (16a) de manière étanche aux liquides afin de la protéger d'une fuite dans celle-ci du matériau de moulage (M) pendant le moulage.
4. Moule (17) selon la revendication 3, caractérisé en ce que ladite tige de pression (20) comporte une bague annulaire (22) qui peut se mettre en prise de façon libérable avec ledit élément d'ancrage (14).
5. Moule (17) selon la revendication 3, caractérisé en ce que ladite tige de pression (20') comporte un élément de mise en prise (22') élastiquement déformable, qui peut se mettre en prise de façon libérable avec ledit élément d'ancrage (14).
6. Moule (17) selon la revendication 3, caractérisé en ce que ladite tige de pression (20'') peut se mettre en prise de façon libérable avec ladite première face (10b) de ladite bande (10).
7. Moule (17) servant à mouler un objet contenant une bande d'agrafage (10) fixée selon le procédé de la

revendication 1 ou 2, la bande d'agrafage (10) comprenant une base qui porte un élément d'ancrage (14) sur une face (10b), un élément d'accrochage (12) et une jupe souple d'étanchéité (16) sur la face opposée (10a), ladite jupe (16) définissant une chambre ouverte (16b) dans laquelle est logé ledit élément d'accrochage (12), ledit moule étant un moule composite formé d'un moule à cavité (19) qui comporte une cavité (25) définie par des parois latérales (19a) courbes et divergeant vers l'extérieur et une paroi formant fond (19b) dont une partie substantielle de la surface s'étend sensiblement à plat vers les côtés, en direction des parois latérales (19a, 19b), et un moule à noyau (18) présentant dans une paroi une pluralité de trous traversants (31), un organe (30) d'application de pression pouvant se mettre en prise libérable avec ledit moule à noyau (18) et comportant une pluralité de moyens (20, 20', 20'') d'application de pression qui passent à travers lesdits trous traversants (31) pour se mettre en prise avec ladite bande (10) et appliquer une pression à ladite bande (10) de telle sorte que ladite jupe d'étanchéité (16) soit maintenue à plat contre ladite partie sensiblement plate de ladite paroi formant fond (19b) du moule à cavité (19) pour fermer ladite chambre (16a) de manière étanche aux liquides afin de la protéger d'une fuite dans celle-ci du matériau de moulage (M) pendant le moulage.

FIG. 1

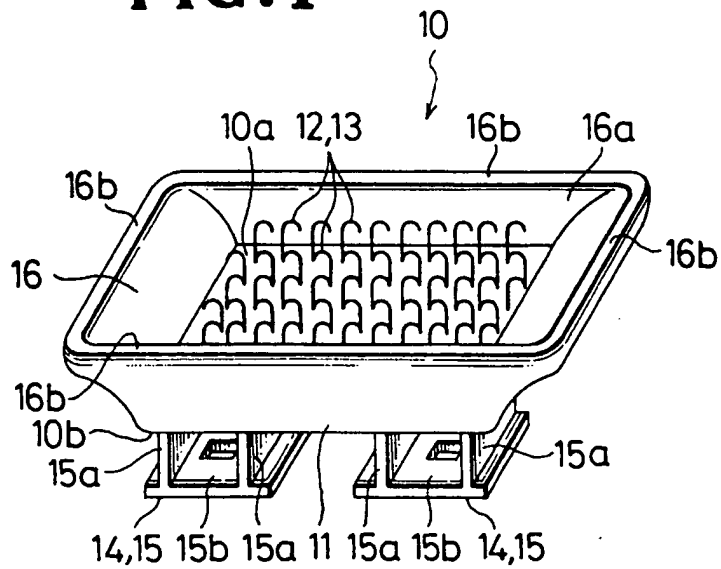


FIG. 2

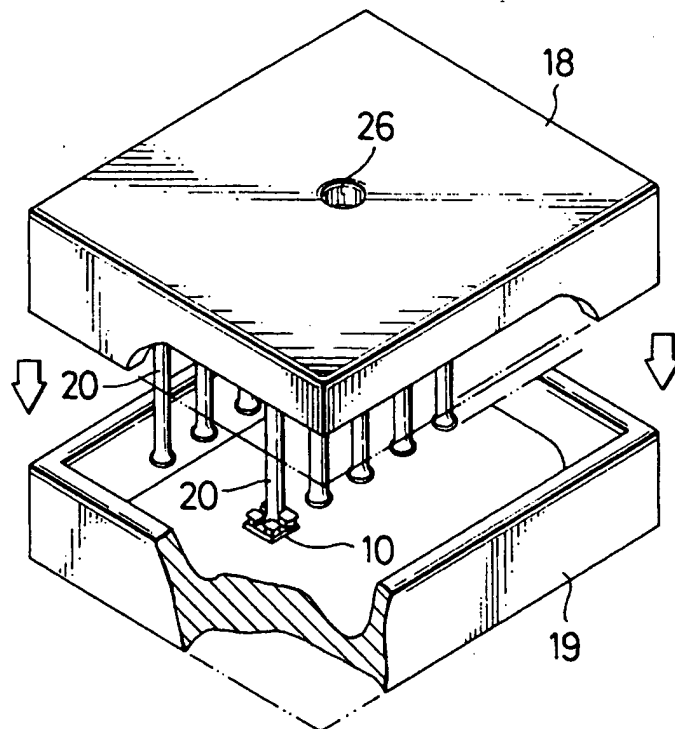


FIG. 3

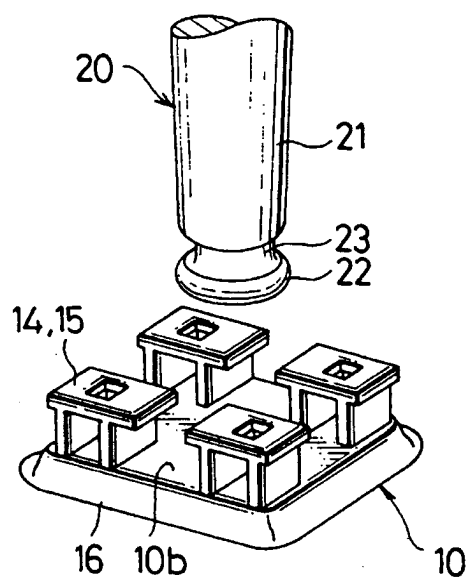


FIG. 4

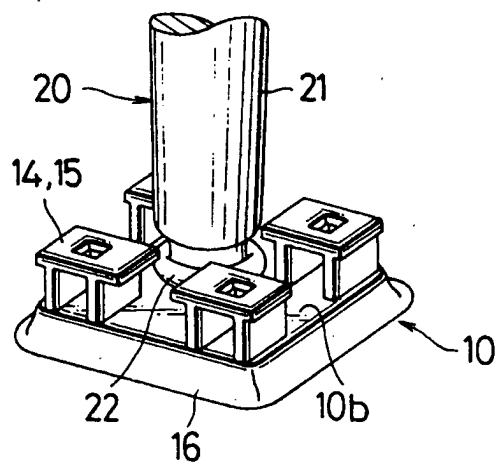


FIG. 7

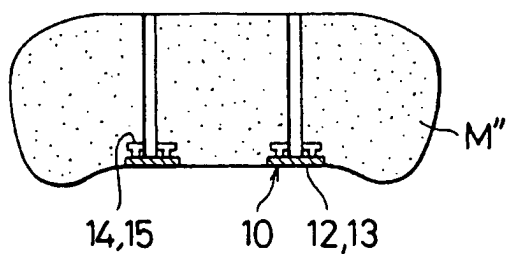


FIG. 8

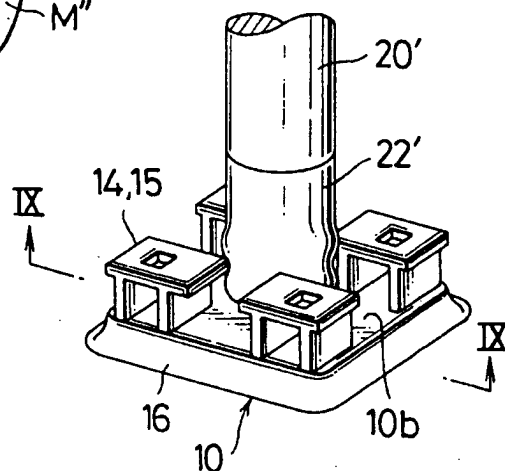


FIG. 9

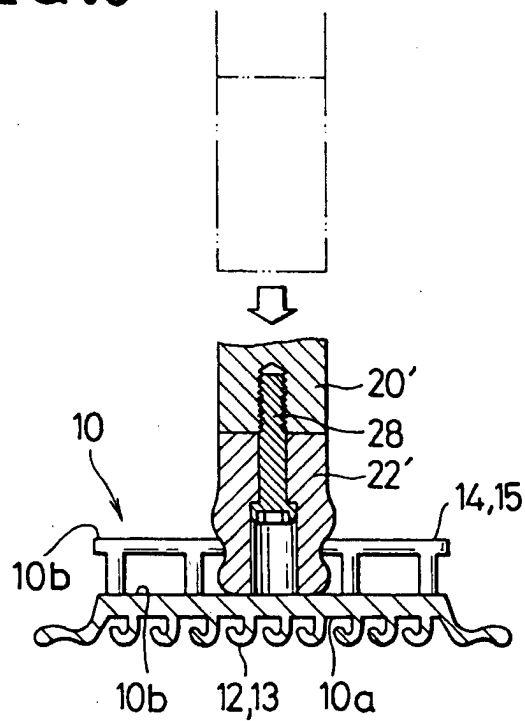


FIG. 10

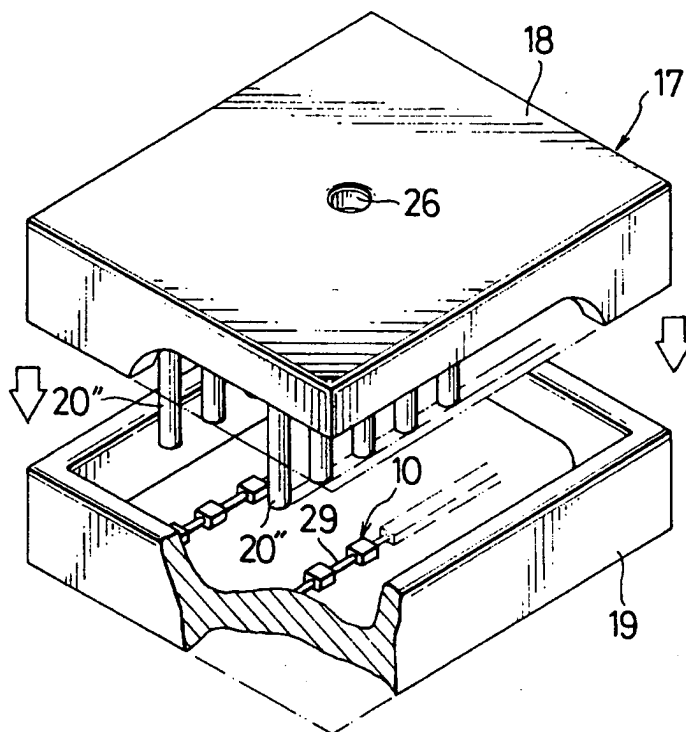


FIG. 11

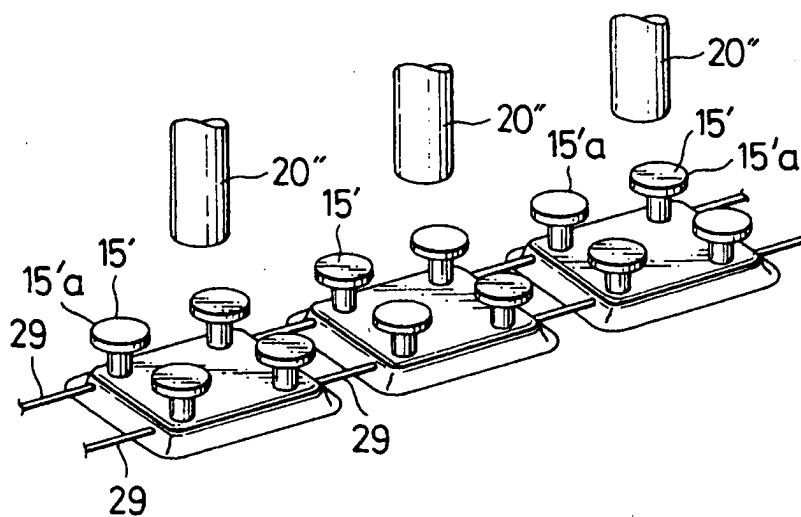


FIG. 12

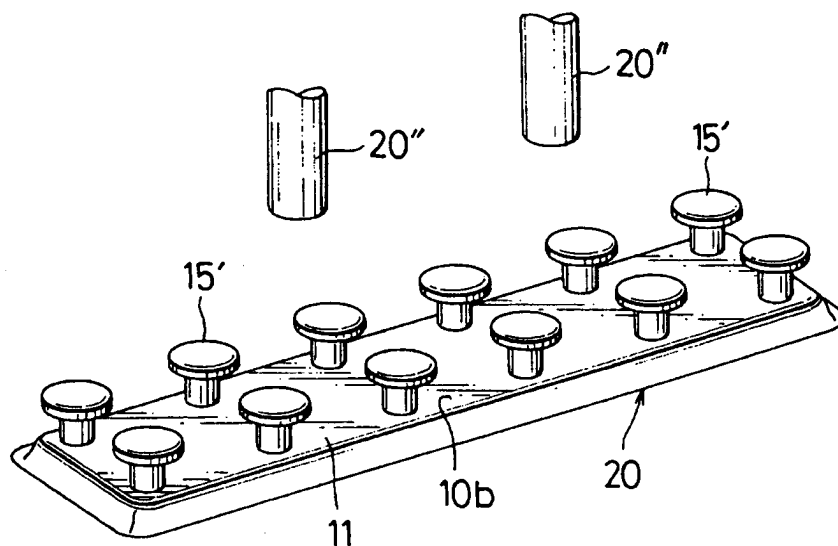


FIG. 13

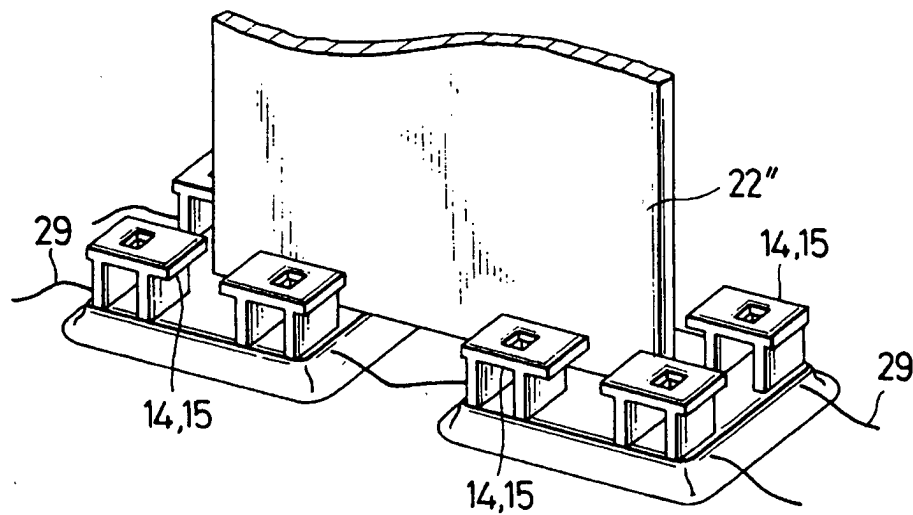


FIG. 14

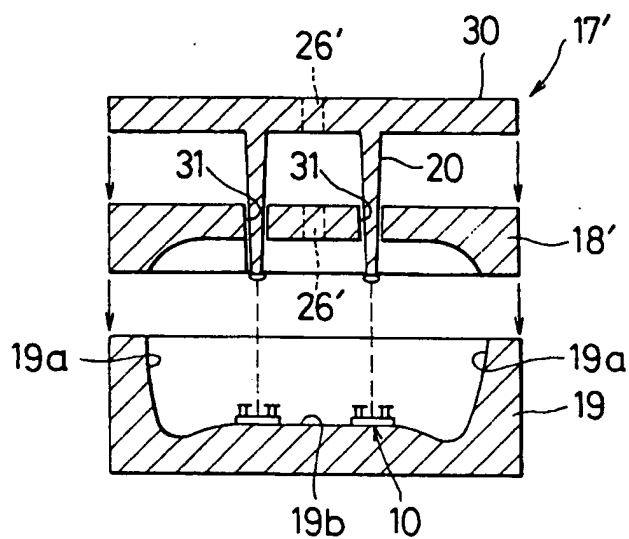


FIG. 15

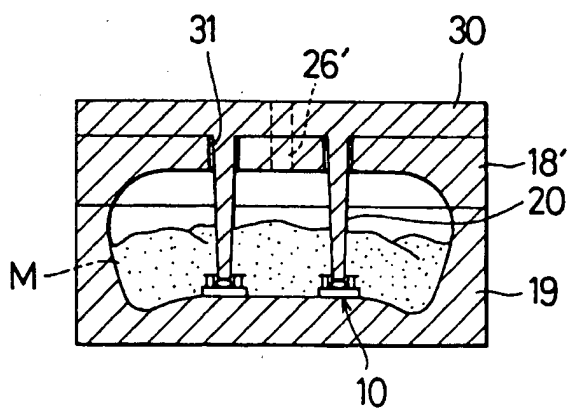


FIG. 16

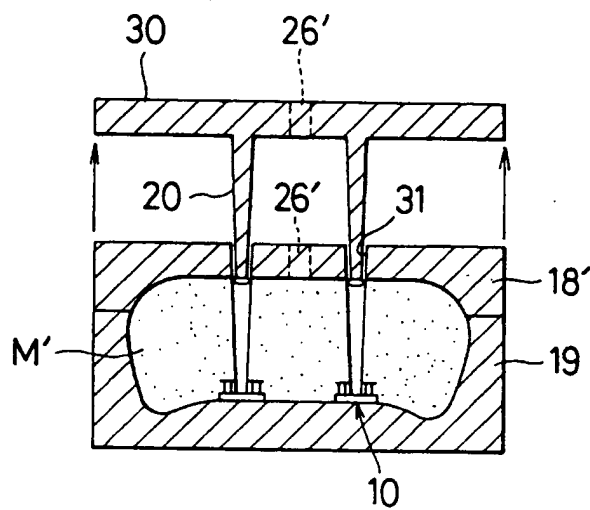


FIG. 17

